COVER CROP

(Acre)

Code 340

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Grasses, legumes, forbs, or other herbaceous plants established for seasonal cover and conservation purposes.

II. Purposes

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Reduce erosion from wind and water
- Increase soil organic matter
- Manage excess nutrients in the soil profile
- Promote biological nitrogen fixation
- Increase biodiversity
- Weed suppression
- Provide supplemental forage
- Soil moisture management

III. Conditions Where Practice Applies

On all lands requiring vegetative cover for natural resource protection. For temporary cover of critical sites or land disturbed by construction, see NRCS, Field Office Technical Guide (FOTG), Section IV Standard 342, Critical Area Planting.

IV. Federal, State, Local Laws

Users of this standard should be aware of potentially applicable federal, state and local laws, rules, regulations or permit requirements governing cover crops. This standard does not contain the text of federal, state, or local laws.

V. Criteria

A. General Criteria

Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, and planting methods will be consistent with this practice standard and site conditions.

The species selected will be compatible with the nutrient management and pest management provisions of the plan.

Cover crops will be terminated by harvest, frost, mowing, tillage, and/or herbicides in preparation for the following crop.

Herbicides used with cover crops will be compatible with the following crop.

Cover crop residue will not be burned.

B. Additional Criteria to reduce Erosion from Wind and Water

Cover crop establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s) identified by the planner.

Plants selected for cover crops will have the physical characteristics necessary to;

1. Produce adequate root structure and vegetative growth to meet the planner's objective.

2. Be capable of growing in the climate conditions preceding the critical erosion period.

The amount of surface and/or canopy cover needed from the cover crop shall be determined using current erosion prediction technology found in NRCS Field Office Technical Guide, Section I.

C. Additional Criteria to Promote Biological Nitrogen Fixation

The specific Rhizobia bacteria will either be present in the soil or the seed will be inoculated at the time of planting legumes.

Nitrogen credits from legume cover crops will be accounted for in the nutrient management plan.

D. Additional Criteria to Manage Excess Nutrients in the Soil Profile

Cover crops will be established and actively growing before expected periods of high precipitation that can cause leaching.

Cover crop species will be selected for their ability to absorb large amounts of nutrients from the rooting profile of the soil.

The above ground biomass will be removed from the field for maximum nutrient removal efficiency.

E. Additional Criteria to Increase Soil Organic Matter

Cover crop species will be selected on the basis of producing high volumes of organic material to maintain or improve soil organic matter.

The NRCS Soil Conditioning Index (SCI) procedure will be used to determine the amount of biomass required.

The cover crop will be terminated as late as feasible to maximize plant biomass and still prepare the seedbed for the subsequent crop.

F. Additional Criteria to Increase Biodiversity

Cover crop species shall be selected that, have different maturity dates, attract beneficial insects, serve as a trap crop for damaging insects, and/or provide food and cover for wildlife habitat management.

G. Additional Criteria to Weed Suppression

Species for the cover crop will be selected for their allelopathic (chemical) or physical competition with weeds.

Cover crops residues will be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

For long-term weed suppression, perennials and/or biennial species can be used.

H. Additional Criteria to Provide Supplemental Forage

Species selected will have desired forage traits, be palatable to livestock, and not interfere with the production of the subsequent crop.

Forage provided by the cover crop may be hayed or grazed as long as sufficient biomass is left for resource protection.

I. Additional Criteria for Soil Moisture Management

Terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop.

Cover crops established for moisture conservation shall be left on the soil surface until the subsequent crop is planted.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to optimize soil moisture removal.

VI. Considerations

The cover crop should be terminated as late as feasible to maximize plant growth and still prepare the seedbed for the subsequent crop.

Deep-rooted species provide maximum nutrient recovery.

Consider that grasses utilize more soil nitrogen, and legumes utilize both nitrogen and phosphorus.

Avoid cover crop species that attract potentially damaging insects.

Acceptable benefits, for most purposes, are usually accomplished when the plant density is at least 25 stems per feet, the combined canopy and surface cover is at least 60 percent, and the above ground (dry weight) biomass production is at least 2700 pounds per acre.

Cover crops may be used to improve site conditions for establishment of perennial species.

Seed produced by cover crops may provide weed competition to subsequent crops.

VII. Plans and Specifications

A plan will be developed for the site where the cover crop will be established. The site will be identified on a plan map. The seeding rate, expected month of seeding establishment and method of seeding will be documented in the plan. The plan will also document additional necessary management requirements such as mowing, grazing or herbicide application.

A. Seedbed Preparation

Prepare a suitable seedbed adequate for the species to be planted. If seeded following harvest of a row crop, prepare a suitable seedbed, if needed. If seeded immediately after the last cultivation, no seedbed preparation is necessary. No-till seeding into standing residue should be considered.

B. Date of Seeding

Generally, sow cover crops just as soon as possible after crop harvest. Certain cover crops can be sown at the same time or immediately following the last cultivation of row crops. Cover crops of small grain will normally be sown between July 15 and September 15. Green manure crops may be sown in the Spring or Fall for turndown the following Spring.

For spring seeding of grasses and legumes, seed as early as possible and no later than June 1. For later summer seedings, seed between July 15 and August 15 in the central part of the state that includes Major Land Resource Areas 90, 91, 94A, 95A, and 96. Make later summer seedings between August 1 and September 1 in the southern part of the state that includes MLRA 95B, 105, and 110. Late summer and fall seedings are hazardous and not recommended for the northern part of the state that includes MLRA 92 and 93.

For grasses alone, cool season grasses will be seeded in spring through late summer. Make no grass seedings in the fall later than September 1 in MLRA 90, 92, 93, and 94A or later than September 15 in MLRA 91, 95A, 95B, 96, 105, and 100.

Seed Mixtures		
1.	**Cover Crops:**	
	Oats	1 - 2 bushels per acre
	Cereal Rye	1 - 1½ bushels per acre
	Winter Wheat	1 bushel per acre
	Annual Ryegrass	15 pounds per acre
	Other species as approved by NRCS State Agronomist	
2.	**Green Manure Crops**	
a.	Well drained and drouthy soils:	
	Alfalfa	12 - 15 pounds per acre
	Buckwheat	35 - 40 pounds per acre
	Sudangrass	25 - 30 pounds per acre
b.	Somewhat poorly drained soils:	
	Medium red clover	8 - 10 pounds per acre
c.	Other species as approved by NRCS State Agronomist	

VIII. Operation and Maintenance

Control competition from volunteer plants and shading.

Control weeds in the cover crop by mowing or herbicide application.

Evaluate condition of the cover crop, prior to planting the next crop in the rotation, to ensure that the cover crop has been uniformly terminated according to the plan.

IX. References

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications.

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section I, Erosion Prediction.